

WE CLAIM:

1. A method of correlating a first microscope observation with a second microscope observation, comprising steps of:

- 5 capturing the first microscope observation to form a first image;
capturing the second microscope observation to form a second image;
selecting two or more points on the first image and two or more corresponding points on the second image;
calculating a transformation based on the selected points to align the first and
10 second images; and
transforming the second image to align the first image with the second image.

2. The method of claim 1, wherein a user selects the two or more points on the first image and locates the two or more corresponding points on the second image.

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3. The method of claim 1, further comprising a step of performing shading corrections on the first image.

4. The method of claim 1, further comprising a step of locating possible
20 objects of interest in the first image.

5. The method of claim 4, further comprising a step of calculating centroid information for the possible objects of interest.

25 6. The method of claim 4, further comprising a step of skeletonizing each possible object of interest.

7. The method of claim 1, further comprising a step of performing shading corrections on the second image.

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8. The method of claim 1, further comprising a step of segmenting the second image to form a segmented second image.

9. The method of claim 8, further comprising a step of segmenting the first
5 image in accordance with the segmented second image.

10. The method of claim 1, wherein the first microscope observation and the second microscope observation each comprise viewing a cervical cell sample.

10 11. The method of claim 10, wherein the cervical cell sample has been treated with an immunofluorescence reagent.

12. The method of claim 11, wherein the immunofluorescence reagent is selected to identify a cellular feature.
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13. The method of claim 11, wherein the cervical cell sample has subsequently been treated with a counterstaining reagent.

14. The method of claim 13, wherein the counterstaining reagent is selected
20 to identify cellular objects.

15. The method of claim 1, further comprising a thresholding step in which pixels below a threshold level are set equal to zero.

25 16. The method of claim 15, wherein pixels at or above the threshold level are set equal to one.

17. A process for examining cervical cell samples, the process comprising steps of:
30 providing a cervical sample on a microscope slide, the cervical sample bearing a first reagent;

placing the microscope slide on a microscope;
capturing a first image of the cervical sample;
removing the cervical sample from the microscope to provide a second reagent;
replacing the cervical sample on the microscope;
5 capturing a second image of the cervical sample; and
reconciling the first and second images.

18. The process of claim 17, wherein the step of reconciling the first and
second images comprises:
10 selecting two or more points on the first image and two or more corresponding
points on the second image;
calculating a transformation based on the selected points to align the first and
second images; and
transforming the second image to align the first image with the second image.

15 19. The process of claim 17, further comprising steps of:
segmenting the second image to form a segmented second image; and
using the segmented second image to segment the first image.

20 20. The process of claim 18, wherein a user selects the two or more points
on the first image and locates the two or more corresponding points on the second
image.

21. The process of claim 17, wherein the step of providing a cervical sample
25 on a microscope comprises providing a cervical sample bearing an immunofluorescent
reagent.

22. The process of claim 17, wherein the step of removing the cervical
sample from the microscope to provide a second reagent comprises adding a
30 counterstaining reagent.

23. The process of claim 17, further comprising a step of performing shading corrections on the first image.

24. The process of claim 17, further comprising a step of locating possible
5 objects of interest in the first image.

25. The process of claim 24, further comprising a step of calculating centroid information for the possible objects of interest.

10 26. The process of claim 24, further comprising a step of skeletonizing each possible object of interest.

27. The process of claim 17, further comprising a step of performing shading corrections on the second image.

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28. The process of claim 17, further comprising a step of segmenting the second image to form a segmented second image.

29. The process of claim 28, further comprising a step of segmenting the
20 first image in accordance with the segmented second image.

30. The process of claim 17, further comprising a thresholding step in which pixels below a threshold level are set equal to zero.

25 31. The process of claim 30, wherein pixels at or above the threshold level are set equal to one.